I CLAIM:

1. A method for increasing the structural strength and corrosion resistence of a load bearing conduit defining an interior, said conduit comprising a substrate having pores and having at least some mineral in composition, the method comprising the steps of:

a. impregnating through a first face of a sheet of semi-rigid thermoplastic material, a reactive resin resulting in a chemically active surface on said first face capable of chemically bonding with a curing agent for an active thermosetting resin;

b. positioning said sheet of semi-rigid thermoplastic material within the interior of said conduit at a preselected location generally a spaced distance from said substrate to create a space between said thermoplastic material sheet and said substrate, and characterized by predetermined interior dimensions within said conduit, having said first face of said sheet facing said substrate, said sheet having a second face facing said interior of said conduit;

c. mixing an active thermosetting resin comprising a curing agent to form a mixture;

d. inserting said mixture within said space between said substrate and said thermoplastic material sheet;

e. bonding said thermosetting resin and minerals in said substrate to form a first region comprising said substrate, a second region comprising at least said thermosetting resin bonded with at least some minerals of said conduit, a third region comprising a thermoset; and,

f. chemically bonding said chemically active surface of said first face of said thermoplastic material sheet with at least some of said curing agent to form a fourth region comprising some of said curing agent bonded with said reactive resin and a fifth region comprising said sheet of thermoplastic material, forming an integrated, chemically continuous composite material comprising said thermoplastic material, said thermoset and said substrate at predetermined

locations within said composite material.

2. The method of Claim 1 wherein in said mixing step and prior to said inserting step, expanding said mixture by admixing a blowing agent to prepare said mixture for forming a cellular thermoset.

3. The method of Claim 1 wherein said thermoplastic material is polyvinyl chloride.

4. The method of Claim 3 wherein said step of positioning said sheet, said polyvinyl chloride sheet has a flexural modulus sufficiently high so that the polyvinyl chloride sheet, after positioning, to bear the load of said mixture of thermosetting resin and curing agent.

5. The method of Claim 1 wherein said thermosetting resin is selected from the group consisting of polyurethane resin, epoxy resin, unsaturated polyesters and combinations thereof, and said curing agent is selected from the group consisting of isocyanates, polyamines, polyamides and combinations thereof.

6. The method of Claim 5 wherein said thermosetting resin includes at least polyurethane, and said curing agent includes at least isocyanates.

7. The method of Claim 6 wherein in said mixing step, the volumetric ratio of said thermosetting resin to said curing agent is approximately 1.02:1.

8. The method of Claim 6 wherein said impregnating step said reactive resin comprises 2-propanoic acid, 2-hydroxypropyl ester, polymer with chloroethane and ethenyl acetate having a density of 1.37 grams per cubic centimeters at 25 degrees Centigrade and a molecular weight of from 8000 to 10000.

9. The method of Claim 1 wherein said thermoplastic material sheet has a distance between said first and said second faces, and wherein said position of said thermoplastic material sheet is predetermined such that the sum of said distance between said first and said second faces of said thermoplastic material sheet and of said spaced distance between said thermoplastic material sheet and said substrate provides for maximum flow within said conduit and maximum tensile and compressive strength of said load bearing conduit.

10. The method of Claim 1 wherein in said inserting step, said thermosetting resin further comprises a surfactant promoting the penetration of said active thermosetting resin into the pores of said porous substrate.

11. The method of Claim 1 wherein said first face of said thermoplastic sheet has a surface area, further comprising the step of forming on said first face of said thermoplastic sheet raised ridges that increase said surface area of said first face.

12. The method of Claim 11 wherein in said step of positioning said thermoplastic sheet, further comprising the step of positioning said ridges circumferentially in relation to said conduit.

13. The method of Claim 1 wherein in said mixing step, said thermosetting resin is comprised of silanes capable of molecular bonding with said minerals in said substrate.

14. The method of Claim 1, wherein said curing agent forms a molecular bond with said reactive resin.

15. The method of Claim 6 wherein in said mixing step and prior to said inserting step, expanding said mixture by admixing a gaseous blowing agent to prepare said mixture for forming a cellular thermoset, and after said inserting step further forming

a cellular thermoset by mixture with a second blowing agent.

16. An integrated, chemically continuous composite material for a load bearing structure having a closed-loop configuration in cross-section defining a predetermined interior, having a plurality of regions continuing across said cross-section from an outside of said structure to said interior of said structure, wherein said composite material comprises:

a. a first region comprising a porous substrate composed of at least some mineral and having pores therein;

b. a second region proximal and interphased with said first region closer to said interior and consisting of a thermoset material bonded to some of said mineral in pores of said porous substrate;

c. a third region proximal and interphased with said second region spatially closer to said interior and comprising a thermoset material integral with and identical to said thermoset material of said second region but not chemically bonded to said mineral in said substrate composition, said thermoset material being formed by setting of a thermosetting resin and a curing agent;

d. a fourth region proximal said third region closer to said interior and comprising a reactive resin chemically bonded with at least some of said curing agent of said thermoset material of said third region;

e. a fifth region proximal to, and defining said interior having a predetermined interior boundary and predetermined interior dimensions, said fifth region comprising a thermoplastic material having some of said reactive resin impregnated into said thermoplastic material proximate said fourth region.

17. The integrated, chemically continuous composite material of Claim 16 wherein said thermoplastic material is polyvinyl chloride having a tensile strength of at least

2200 pounds per square inch.

18. The integrated, chemically continuous composite material of Claim 16 wherein said thermoset material comprises a load, and wherein said thermoplastic material supports said thermoset material load.

19. The integrated, chemically continuous composite material of Claim 16 wherein said thermosetting resin is selected from the group consisting of polyurethane resin, epoxy resin, unsaturated polyesters and combinations thereof, and wherein said curing agent is selected from the group consisting of isocyanates, polyamines, polyamides and combinations thereof.

20. The integrated, chemically continuous composite material of Claim 16 wherein said thermoset material results from a curing of at least a polyurethane resin and at least an isocyanate in which the volumetric ratio of said isocyanate to said polyurethane resin is at least 1.02:1.

21. The integrated, chemically continuous composite material of Claim 16 wherein said reactive resin comprises 2-propanoic acid, 2-hydroxypropyl ester, polymer with chloroethane and ethenyl acetate having a density of 1.37 grams per cubic centimeters at 25 degrees Centigrade and a molecular weight of from 8000 to 10000.

22. The integrated, chemically continuous composite material of Claim 16 wherein said thermosetting resin further comprises a surfactant promoting the penetration of said active thermosetting resin into the pores of said porous substrate.

23. The integrated, chemically continuous composite material of Claim 16 wherein said first face of said thermoplastic sheet has a surface area, said material further comprising raised ridges formed on said first face of said thermoplastic sheet.

24. The integrated, chemically continuous composite material of Claim 23 wherein said ridges are positioned circumferentially in relation to said conduit.

25. The integrated, chemically continuous composite material of Claim 16 wherein said fourth proximal region further comprises a reactive resin chemically reacted and molecularly bonded with said curing agent of said thermoset material.

26. The integrated, chemically continuous composite material of Claim 16 wherein in said second proximal region, said thermoset material comprises silane bonded to some of said mineral of said porous substrate.

27. The integrated, chemically continuous composite material of Claim 16 wherein said third proximal region further comprises a cellular thermoset.

28. A load bearing structure having a closed-loop configuration in cross-section defining a predetermined interior, comprising an integrated, chemically continuous composite material having a plurality of regions continuing progressively from an outside of said structure to said interior of said structure, said composite material comprising:

a. a first compositional region comprising a porous, mineral-containing substrate having pores;

b. a second compositional region comprising a thermoset material chemically bonded by silane with at least some of the mineral and within said pores of said substrate;

c. a third compositional region proximate and interphased with said second compositional region consisting of a thermoset material selected from the group consisting of polyurethane, epoxy and combinations thereof, and including silane;

d. a fourth compositional region proximate said third compositional region and consisting of polyvinyl chloride having a substantial amount

of hydroxyl ions molecularly bonded to some isocyanates; and,

e. a sheet of thermoplastic material proximate to and defining said predetermined interior having a predetermined boundary and a predetermined interior dimensions, said thermoplastic material sheet having a tensile strength of at least 2200 pounds per square inch.

29. The load bearing structure of Claim 28 wherein in said second compositional region, said hydroxyl ions are included in 2-propanoic acid, 2-hydroxypropyl ester, polymer with chloroethane and ethenyl acetate having a density of 1.37 grams per cubic centimeters at 25 degrees Centigrade and a molecular weight of from 8000 to 10000.

30. The integrated composite structure of Claim 28 in which the thermoplastic material sheet is polyvinyl chloride having a tensile strength in the range of from 5,000 psi to 10,000 psi.

31. The load bearing structure of Claim 28 wherein said structure comprises a conduit having a closed circumference.

32. The load bearing structure of Claim 28 wherein said first face of said thermoplastic material sheet has a surface area, and wherein said integrated composite material further comprises means positioned on said first face of said thermoplastic material sheet for increasing the surface area of said first face.

33. The load bearing structure of Claim 32 wherein said means for increasing said surface area of said first face comprises ridges raised from said first face, comprising surface areas generally perpendicular to said thermoplastic material sheet.

34. The load bearing structure of Claim 33 wherein said structure comprises a conduit defining a closed circumference.

35. The load bearing structure of Claim 34 wherein said raised ridges are positioned circumferentially in relation to said conduit.